

REMARKS

In reply to the Office Communication dated December 5, 2008, Applicants have restored the claims to their status following the Office Action of September 11, 2007. Based on the claims at that time, Applicants have amended claims 26-28, 35, 43, 59, 60, and 62-66. Applicants have also added new claims 67-77. No claims have been canceled. Accordingly, claims 26-28, 31-37, 40-41, 43-44, and 59-77 are pending, with claims 26, 43, and 63 in independent form.

Interview Summary

Applicants thank the Examiner for taking the time to discuss this case by telephone with Applicants' representative Marc M. Wefers on December 30, 2008. During the call, the Examiner explained in greater detail than in the December 5, 2008, communication his reasons for determining that the pending claims did not read on the constructively elected species of dependent claim 28. Specifically, he said that the "two non-lateral surfaces" were already recited in the base claim as the light exit face and the side opposite the light exit face. He recommended deleting the reference to the "two non-lateral surfaces."

Applicants also thank the Examiner for taking the time to further discuss this case by telephone with Applicants' representative Marc M. Wefers on April 24, 2009, during which time additional aspects of restriction practice were discussed in connection with the present set of claims.

Constructive Election

Before addressing the rejections of the pending claims, Applicants wish to comment upon the relation of the pending claims to the subject matter that the Examiner believes has been constructively elected for prosecution. Applicants do not concede that the claims are restricted to any particular embodiment disclosed in the application, nor do Applicants concede that the Examiner's position regarding the subject matter that has been constructively elected is correct. Nonetheless, for the sake of argument only, even if the subject matter that the Examiner

Applicants have reproduced Figure 1 of the present application below. For the purposes of the discussion herein, Applicants have added labels to refer to surfaces S1 and S2, and label M to refer to the midpoint of the waveguide in Figure 1. The Examiner has previously acknowledged that the embodiment shown in Figure 1 is within the scope of what he believes to be Applicants' constructive election.

At least one projection (e.g., light infeed unit 5) is formed in at least one of the side faces (e.g., side face 1C) of light waveguide 1. The projection extends over less than an entire length

of the side face, and includes (e.g., is formed by) a portion of the light exit face (e.g., the top surface of waveguide 1), a portion of the surface opposite the light exit face (e.g., the bottom surface of waveguide 1), and first and second lateral surfaces (e.g., surfaces S1 and S2, respectively) connecting the portions of the light exit face and the surface opposite the light exit face. The first lateral surface (e.g., surface S1) is covered by a reflector (e.g., reflector 4) and the second lateral surface (e.g., surface S2) is not covered by a reflector and is arranged at an acute angle to a principal direction of extent of the light waveguide to form a light entry face. The light source (e.g., light source 5A) is positioned in front of the light entry face formed by the second lateral surface (e.g., surface S2). Accordingly, Applicants submit that amended claim 26 reads directly on the embodiment shown in Figure 1 of the present application.

Claim 28 depends from claim 26, and has been amended to cover light source elements where the first and second lateral surfaces (e.g., surfaces S1 and S2, respectively) intersect to that the at least one projection (e.g., light infeed unit 5) has a triangular cross-sectional shape. Applicants submit that amended claim 26 reads directly on the embodiment shown in Figure 1.

Independent claim 43 has been amended to cover liquid crystal displays that include features that are similar to the features of the light source elements of claim 26. Therefore, for at least the same reasons, Applicants submit that amended claim 43 reads directly on the embodiments shown in Figure 1 above and in Figure 2 of the present application.

Independent claim 63 has also been amended in this Reply. With reference to Figure 1 above, the light source elements covered by claim 63 include a light waveguide (e.g., light waveguide 1) and a light source (e.g., light source 5A). The light waveguide has a light exit face (e.g., top surface of waveguide 1) and a surface lying opposite the light exit face (e.g., bottom surface of waveguide 1, not shown). The light exit face and the surface lying opposite the light exit face are connected by side faces (e.g., side faces 1C and 1D). The surface opposite the light exit face and at least some portions of the side faces are covered and contacted with reflectors (e.g., reflectors 4) that at least one of reflect and diffusely return light.

At least one projection (e.g., light infeed unit 5) is formed in at least one of the side faces of the light waveguide and the surface opposite the light exit face. Each projection includes

(e.g., is formed by) portions of the first and second lateral surfaces (e.g., surfaces S1 and S2, respectively) connecting the light exit face and the surface opposite the light exit face. The at least one projection includes a light entry face (e.g., surface S2) in front of which the light source (e.g., light source 5A) is positioned. The light entry face is arranged at an acute angle relative to a principal direction of extent of waveguide 1. The light exit face (e.g., top surface of waveguide 1) and the surface opposite the light exit face (e.g., bottom surface of waveguide 1) are substantially parallel. Accordingly, Applicants submit that amended claim 63 reads directly on the embodiment shown in Figure 1 of the present application.

Claims 27, 35, 59-60, 62, and 64-66 have also been amended. These amendments have been made to correct typographical errors and/or to bring the language of these claims into conformance with amended claims 26, 43, and 63.

New claims 67-77 have been added in this Reply. New claim 67 recites two or more projections each extending over less than an entire length of the at least one of the side faces. Referring to Figure 1, waveguide 1 includes six projections, each extending over less than an entire length of the side surfaces of waveguide 1.

Claim 68 recites that each of the projections includes a separate light entry face. In Figure 1, each of the six projections includes a separate light entry face analogous to surface S2 of light infeed unit 5.

Claim 69 recites at least one of the two or more projections is positioned on a first side of a midpoint of the waveguide, and at least one of the two or more projections is positioned on a second side of the midpoint opposite the first side. In Figure 1, light waveguide 1 has a midpoint, labeled M, as a geometrical truism. Light infeed unit 5 is positioned in side face 1C on one side of midpoint M. Other light infeed units are positioned in side face 1C on a second side of midpoint M opposite the first side.

Claim 70 recites at least two projections are formed in each of the side faces of the light waveguide. In Figure 1, four light infeed units, including light infeed unit 5, are formed in side surface 1C of waveguide 1; two light infeed units are formed in side surface 1D of waveguide 1. Claim 72 further recites that for each side face, at least one of the at least two projections is

positioned on a first side of a midpoint of the light waveguide, and at least one of the at least two projections is positioned on a second side of the midpoint opposite the first side. In side surface 1C, two of the four light infeed units are positioned on one side of midpoint M, and the other two light infeed units are positioned on the other side of midpoint M. In side surface 1D, the two light infeed units are positioned on opposite sides of midpoint M.

Thus, Applicants submit that each of new claims 67-70 reads directly on the embodiment shown in Figure 1. New claims 75-77 include features that are similar to the features recited in claims 67-70, and also therefore read directly on the embodiment of Figure 1 (and also the embodiment of Figure 2).

The foregoing explanation does not limit the scope of Applicants' claims to the embodiment shown in Figure 1 (and Figure 2) of the present application, and Applicants do not concede any attempt or argument attempting to so limit the claims. Nevertheless, as shown above, each of the pending claims in the present application falls within the scope of the constructive election that the Examiner alleges has occurred during prosecution of this application.

Claim Rejections

As noted above, the following claim rejections are assumed based on the status of the present application following the Office Action of September 11, 2007. Claims 26, 27, 31, 43, and 59-66 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kalmanash (U.S. Patent No. 5,211,463, "Kalmanash") in view of Tatsuaki et al. (EP 0 798 507, "Tatsuaki") and Johnson et al. (U.S. Patent No. 6,439,731, "Johnson"). With regard to independent claims 26, 43, and 63, the Action alleges that Kalmanash discloses substantially all of the limitations of claims 26, 43, and 63 (Action at pages 4-6, 11, 23-25), but relies on Tatsuaki to allegedly teach that "at least one of the light exit face and the opposite surface of the light waveguide comprise light-scattering sections and plane sections, and an area ratio of the plane sections to the light-scattering sections along the light waveguide is set such that a uniform luminance of the light source element is achieved" (Action at pages 6-7, 12, 25-28). Further, the

Action relies on Johnson to allegedly teach “using semiconductor light-emitting diode light sources” (Action at pages 9, 28-29).

Applicants do not concede the merits of the proposed combination of Kalmanash, Tatsuaki, and Johnson. Nonetheless, to expedite prosecution, claims 26 and 43 have been amended in this Reply to cover light source elements and liquid crystal displays, respectively, that include “at least one projection ... formed in at least one of the side faces of the light waveguide, each projection extending over less than an entire length of the at least one of the side faces and comprising a portion of the light exit face, a portion of the surface opposite the light exit face, and first and second lateral surfaces connecting said portions of the light exit face and the surface opposite the light exit face.” To the best of Applicants’ knowledge, none of Kalmanash, Tatsuaki, or Johnson discloses or suggests such light source elements and liquid crystal displays, for at least the following reasons.

First, none of Kalmanash, Tatsuaki, or Johnson disclose “at least one projection ... formed in at least one of the side faces of the light waveguide, each projection extending over less than an entire length of the at least one of the side faces.” In fact, none of Kalmanash, Tatsuaki, or Johnson even discloses a projection as recited by claims 26 and 43. There is simply no disclosure relating to this feature in any of Kalmanash, Tatsuaki, and Johnson.

With reference to Kalmanash, for example, Figures 6 and 7 instead show a block 86 that includes *recessed* ends 100 that admit light from sources 102 into block 86. Ends 100 are not the “at least one projection” recited by claims 26 and 43.

With reference to Tatsuaki, for example, Figure 4 shows an exemplary light guide plate 21 that includes edges 41a-d. No projections are formed in any of edges 41a-d, and Tatsuaki provides no disclosure relating to the projections recited by claims 26 and 43.

Johnson does not even include a waveguide. To the extent that Johnson’s diffuser panel 20 (e.g., see Figure 1 of Johnson) can be considered to form a waveguide (which Applicants dispute), diffuser panel 20 does not include projections formed in any lateral surfaces, and Johnson provides no disclosure relating to the projections recited by claims 26 and 43.

Second, none of Kalmanash, Tatsuaki, or Johnson disclose or suggest features corresponding to the claimed “at least one projection ... extending over less than an entire length of the at least one of the side faces,” as required by claims 26 and 43. Instead, as discussed above, each of Kalmanash, Tatsuaki, and Johnson discloses edge surfaces that do not include projections, and which extend along the entire length of the waveguide. For example, Kalmanash's ends 100 extend along the entire length of block 86, while edges 41a-d extend along the entire length of Tatsuaki's light guide plate 21, and the edges of Johnson's diffuser panel 20 extend along the entire length of the panel. None of Kalmanash, Tatsuaki, and Johnson includes any disclosure relating to projections that extend over less than an entire length of a lateral surface of a waveguide.

Third, claims 26 and 43 require that the at least one projection includes “a portion of the light exit face, a portion of the surface opposite the light exit face, and first and second lateral surfaces connecting said portions of the light exit face and the surface opposite the light exit face,” and further that the “first lateral surface is covered by a reflector, and the second lateral surface is not covered by a reflector and is arranged at an acute angle relative to a principal direction of extent of the light waveguide to form a light entry face.” As best Applicants have been able to determine, none of Kalmanash, Tatsuaki, or Johnson discloses or suggests any structural features which correspond to the features recited in claims 26 and 43, and Applicants have been unable to find any reasonable interpretation of Kalmanash, Tatsuaki, or Johnson (or any combination thereof) that discloses or suggests these limitations. In particular, Applicants have been unable to find any disclosure in Kalmanash, Tatsuaki, or Johnson relating to a projection formed in a side face of a waveguide and including a portion of the light exit face, a portion of the surface opposite the light exit face, and first and second lateral surfaces connecting the portions of the light exit face and the surface opposite the light exit face.

With regard to previous claim 28, the Action states that Kalmanash “discloses the light source element according to claim 27 above wherein at least one projection is formed in at least one of at least one longitudinal lateral surface and the opposite surface of the light waveguide, a lateral surface of said projection being covered by a reflector and another lateral surface of the

projection lying free toward the outside and forming the aperture region” (Action at page 20). The Action does not indicate how Kalmanash's ends 100 correspond to the at least one projection recited by amended claims 26 and 43. Applicants have been unable to find any reasonable interpretation of Kalmanash that is consistent with all of the features of the “at least one projection” recited by amended claims 26 and 43.

Nonetheless, even if Kalmanash's ends 100 could at least be considered to form projections, which Applicants do not concede, Applicants submit that there is still no disclosure or suggestion in Kalmanash that relates to “each projection extending over less than an entire length of the at least one of the side faces,” as required by claims 26 and 43. Moreover, there is no disclosure or suggestion in Kalmanash that relates to projections that include “a portion of the light exit face, a portion of the surface opposite the light exit face, and first and second lateral surfaces connecting said portions of the light exit face and the surface opposite the light exit face,” and that also include “[a] first lateral surface [that] is covered by a reflector and [a] second lateral surface [that] is not covered by a reflector and is arranged at an acute angle relative to a principal direction of extent of the light waveguide to form a light entry face,” as required by claims 26 and 43.

Furthermore, a person of ordinary skill in the art would have had no reason to modify the devices of Kalmanash or Tatsuaki to provide the claimed light source elements and liquid crystal displays. Kalmanash's devices include extended light sources 102 that are tubular in shape (see Figures 6 and 7 of Kalmanash), positioned adjacent to edges 100. A person of ordinary skill in the art would not have modified edges 100 to extend “over less than an entire length of the at least one of the side faces,” as recited by claims 26 and 43, because doing so would reduce the amount of light that enters block 86 from light sources 102, thereby reducing the brightness of Kalmanash's devices. Similarly, Tatsuaki's devices include tubular light sources such as, for example, fluorescent light 22 shown in Figure 4. A person of ordinary skill in the art would not have modified edges 41a-d of Tatsuaki's light guide plate 21 to extend “over less than an entire length of the at least one of the side faces” as recited by claims 26 and 43, because doing so would reduce the amount of light entering guide plate 21, thereby reducing the brightness of

Tatsuaki's devices. Accordingly, notwithstanding the Action's statements regarding claim 28, neither Kalmanash nor Tatsuaki, alone or in combination, discloses or suggests the light source elements and liquid crystal displays covered by claims 26 and 43.

Sawayama (U.S. Patent No. 6,048,071, "Sawayama") is cited with respect to a rejection of claim 28 in the Office Action, where the Action alleges that claim 28 is unpatentable over a combination of Kalmanash in view of Tatsuaki and Sawayama (Action at pages 20-21). As shown, for example, in Figure 9 of Sawayama, Sawayama discloses liquid crystal display devices that include an angled light-conducting body 44.

However, Sawayama, either alone or in combination with one or more of Kalmanash, Tatsuaki, and Johnson, fails to disclose or suggest the light source elements and liquid crystal displays covered by claims 26 and 43 for at least the following reasons. First, claims 26 and 43 require "at least one projection ... formed in at least one of the *side faces* of the light waveguide" (emphasis added). Sawayama does not disclose projections formed in side faces of waveguides. Instead, as shown in Figure 9 for example, Sawayama's light-conducting body 44 is formed in interface 48; interface 48 functions as a light exit surface for cell 10. Applicants have been unable to find any disclosure or suggestion in Sawayama that relates to forming a light-conducting body (e.g., a projection) in a lateral surface of cell 10.

Second, Sawayama's light-conducting body 44 does not extend "over less than an entire length of the at least one of the side faces" as required by claims 26 and 43. To the contrary, as discussed above, Sawayama's light-conducting body 44 does not extend over a side face of cell 10 at all, but instead extends over a light exit surface of cell 10. Moreover, light-conducting body 44 extends over an *entire* length of the light exit surface of cell 10. Applicants have been unable to find any disclosure or suggestion in Sawayama that relates to a light-conducting body that extends over less than an entire length of any surface of cell 10 (and in particular, a side face of cell 10), and no reason to modify Sawayama in this regard, because such a light-conducting body would introduce less light intensity into Sawayama's liquid crystal cell, reducing its brightness.

Third, Sawayama's light-conducting body 44 does not apparently include a "first lateral surface [that] is covered by a reflector" as required by claims 26 and 43. Instead, as shown in Figure 9 for example, neither surface 45, nor surface 43, nor any other surface of light-conducting block 44 includes reflectors. Furthermore, Sawayama provides no suggestion to cover either surface 45 or surface 43 with reflectors. If surface 45 was covered with a reflector, light from source 26 could not be coupled into light-conducting body 44. If surface 43 was covered with a reflector, light would not be able to exit cell 10. Thus, if either surface 45 or surface 43 was covered with a reflector, Sawayama's cell would no longer operate as he discloses.

Moreover, a person of ordinary skill in the art would have had no reason to combine Sawayama with Kalmanash and Tatsuaki. First, it is not at all clear, given the structures of Kalmanash's and Sawayama's waveguides, that these two references *can* be combined to yield the features of Kalmanash's waveguide with a light-conducting body of the type disclosed by Sawayama, for example. There is no indication in either Kalmanash or Sawayama of how such a combination could be made, and it is not obvious how to make such a combination given the very different modes of operation of the two waveguides.

In addition, it is not clear for what reason such a combination would be made. Applicants have been unable to find any disclosure in Kalmanash that suggests his waveguides can include light-conducting bodies similar to those disclosed by Sawayama. There does not appear to be any suggestion in Kalmanash that it would be of any advantage to include such bodies, or how such bodies could be added to his waveguides.

Second, even if Kalmanash and Sawayama were combined (along with Tatsuaki), which Applicants do not concede, the combination still would not cover the light source elements and liquid crystal displays of claims 26 and 43, at least because none of Kalmanash, Tatsuaki, and Sawayama discloses: (a) a projection "formed in at least one of the side faces of the light waveguide"; (b) at least one projection "extending over less than an entire length of the at least one of the side faces"; and (c) a projection that includes a "first lateral surface ... covered by a reflector." Therefore, Applicants submit that a person of ordinary skill in the art would have had

no reason to combine Sawayama with Kalmanash and/or Tatsuaki, and even if such a combination occurred, the result still would not be the light source elements and liquid crystal displays covered by claims 26 and 43.

In view of the foregoing, Applicants submit that amended claims 26 and 43 are patentable over Kalmanash, Tatsuaki, Johnson, and Sawayama, alone or in combination. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections of claims 26 and 43 under 35 U.S.C. § 103(a).

In this Reply, to expedite prosecution, independent claim 63 has been amended to recite “at least one projection ... formed in at least one of the side faces of the light waveguide and the surface opposite the light exit face,” and to further recite that “the light exit face and the surface opposite the light exit face are substantially parallel.” Amended claim 63 is patentable over Kalmanash, Tatsuaki, and Johnson, for at least the following reasons.

As discussed above in connection with claims 26 and 43, none of Kalmanash, Tatsuaki, or Johnson discloses or suggests “at least one projection ... formed in at least one of the side faces of the light waveguide and the surface opposite the light exit face” as required by amended claim 63. Applicants have been unable to find any reasonable interpretation of any of these references that is consistent with all of the features of the at least one projection recited in claim 63. In particular, Applicants have been unable to find any disclosure in any of these references that relates at all to projections formed in surfaces of waveguides.

Applicants also believe that Sawayama, either alone or in combination with one or more of Kalmanash, Tatsuaki, and Johnson, fails to disclose or suggest the light source elements covered by claim 63. As discussed above in connection with claims 26 and 43, Sawayama does not disclose a light source element with a projection formed in a side face or a surface opposite the light exit face of a waveguide, as required by amended claim 63. Instead, Sawayama's light-conducting body 44 is positioned atop a light exit face 48 of his cell 10.

Further, a person of ordinary skill in the art would have had no reason to modify Sawayama to include the at least one projection recited in claim 63, for at least the following reasons. First, as discussed above, doing so would likely reduce the brightness of Sawayama's

liquid crystal cell. Second, it is not at all clear, given the structures of Kalmanash's and Sawayama's waveguides, that these two references can be combined to yield the features of Kalmanash's waveguide with a light-conducting body of the type disclosed by Sawayama, for example. There is no indication in either Kalmanash or Sawayama of how such a combination could be made, and it is not obvious how to make such a combination given the very different modes of operation of the two waveguides.

Third, it is not clear for what reason such a combination would be made. Applicants can find no disclosure in Kalmanash that suggests his waveguides can include light-conducting bodies similar to those disclosed by Sawayama. There does not appear to be any suggestion in Kalmanash that it would be of any advantage to include such bodies, or how such bodies could be added to his waveguides.

In view of the foregoing, Applicants submit that amended claim 63 is patentable over Kalmanash, Tatsuaki, Johnson, and Sawayama, alone or in combination. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 63 under 35 U.S.C. § 103(a).

Claims 27, 31, 59-62, and 64-66 depend from one of claims 26, 43, and 63, and are therefore patentable over Kalmanash, Tatsuaki, Johnson, and Sawayama for at least the same reasons as claims 26, 43, and 63. Accordingly, reconsideration and withdrawal of the rejections of these claims under 35 U.S.C. § 103 (a) is respectfully requested.

Claim 28 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kalmanash and Tatsuaki in view of Sawayama. However, claim 28 depends from claim 26, and as discussed above in connection with claim 26, none of Kalmanash, Tatsuaki, Johnson, and Sawayama, alone or in combination, disclose the light source elements of claim 26. Claim 28 is therefore patentable over each of Kalmanash, Tatsuaki, Johnson, and Sawayama, alone or in combination, for at least the same reasons as claim 26. Accordingly, Applicants request reconsideration and withdrawal of the rejection of claim 28 under 35 U.S.C. § 103(a).

Claims 32-37, 40-42, and 44 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kalmanash in view of Tatsuaki alone, or in view of Tatsuaki and one of the

following: Waitl et al. (U.S. Patent No. 5,040,868, "Waitl"), Tai et al. (U.S. Patent No. 6,092,904, "Tai"), Suzuki et al. (U.S. Patent No. 5,949,346, "Suzuki"), Akahane et al. (U.S. Patent No. 5,667,289, "Akahane"), and Ge (U.S. Patent No. 6,369,867, "Ge"). Without addressing the merits of these proposed combinations of references, Applicants note that claims 32-37, 40-42, and 44 each depend from one of claims 26 and 43.

As discussed above, claims 26 and 43 are patentable over Kalmanash, Tatsuaki, Johnson, and Sawayama, alone or in combination. None of Waitl, Tai, Suzuki, Akahane, and Ge cures the deficiencies of Kalmanash, Tatsuaki, Johnson, and Sawayama with respect to claims 26 and 43. Accordingly, claims 26 and 43 are patentable over Kalmanash, Tatsuaki, Johnson, Sawayama, Waitl, Tai, Suzuki, Akahane, and Ge, alone or in combination.

For at least the same reasons, each of claims 32-37, 40-42, and 44 is patentable over Kalmanash, Tatsuaki, Johnson, Sawayama, Waitl, Tai, Suzuki, Akahane, and Ge, taken alone or in combination. Therefore, Applicants respectfully request reconsideration and withdrawal of the rejections of these claims under 35 U.S.C. § 103(a).

New claims 67-77 have been added in this Reply. Each of claims 67-87 depends from one of claims 26, 43, and 63, and is therefore patentable over Kalmanash, Tatsuaki, Johnson, Sawayama, Waitl, Tai, Suzuki, Akahane, and Ge, taken alone or in combination, for at least the same reasons as claims 26, 43, and 63. Accordingly, Applicants respectfully request allowance of claims 67-77.

In view of the foregoing, Applicants ask that the application be allowed.

Canceled claims, if any, have been canceled without prejudice or disclaimer. Any circumstance in which Applicants have: (a) addressed certain comments of the Examiner does not mean that Applicants concede other comments of the Examiner; (b) made arguments for the patentability of some claims does not mean that there are not other good reasons for patentability of those claims and other claims; or (c) amended or canceled a claim does not mean that Applicants concede any of the Examiner's positions with respect to that claim or other claims.

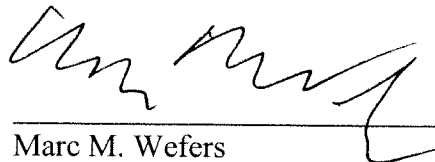
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Serial No. : 09/868,364
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Page : 23 of 23

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The fees for the Petition for Extension of Time in the amount of \$1,730.00 are being paid concurrently on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to Deposit Account 06-1050, referencing Attorney Docket No. 12406-0126001.

Respectfully submitted,

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